



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,451	01/15/2004	Masanobu Kobayashi	118347	4093

25944 7590 02/16/2007  
OLIFF & BERRIDGE, PLC  
P.O. BOX 19928  
ALEXANDRIA, VA 22320

EXAMINER
----------

SHIKHMAN, MAX

ART UNIT	PAPER NUMBER
----------	--------------

2609

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/16/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/757,451

Applicant(s)

KOBAYASHI ET AL.

Examiner

Max Shikhman

Art Unit

2609

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 5-27 is/are rejected.
- 7) ☒ Claim(s) 3, 4 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date Dec 23, 2005. May 30, 2006.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 4 is objected to because of the following informalities: Parenthesis do not match. For example, this needs a matching parenthesis: "the darkroom reference luminance value)." Applicant needs to correct all other instances of parenthesis mismatch. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 101***

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 9 and 10 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. In both claims, "computer-readable program" is being recited; however, computer-readable program would reasonably be interpreted by one of ordinary skill in the art as software, per se. This subject matter is not limited to that which falls within a statutory category of invention because it is limited to a process, machine, manufacture, or a composition of matter. Software is a function descriptive material and a function descriptive material is non-statutory subject matter.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 2, 5-27 are rejected under 35 U.S.C. 102(e) as being unpatentable by Noguchi (PGPUB-DOCUMENT-NUMBER: 20030081181).

As shown in Figure 1, Noguchi discloses as follows.

**(j) Regarding Claim 1:**

*An image processing system comprising: signal input means for inputting an image signal;*

(Figure 1. ABSTRACT: an input image signal.

[0041] "inputted image signal RGB")

*luminance regulating means for regulating a luminance value of an image by correcting the inputted image signal;*

(ABSTRACT: "luminance correction circuit...irregular luminance correction for an input image."

9 in Figure 1.

[0010] "solving an irregular color and an irregular luminance.")

*signal output means for outputting the corrected image signal;*

Art Unit: 2609

[0012] "a display device for displaying an image;"

[0013] "an optical system for enlarged-projecting the image displayed on the display device by a light from a light source."

Figure 1, Display device 3 accepts a corrected image from correction circuit 1.

[0042] The image signal of which the irregular color and the irregular luminance are corrected is input into a display device 3.

[0044] "when the screen 5 is a reflective screen, there is provided a front projector 10, and when the screen 5 is a transparent screen, there is provided a rear projector 11.")

*and instruction input means for inputting instruction information which represents a correction instruction from a user,*

(Figure 1. [0043] "external interface 8."

[0057] "updates the data stored in the memory 7 using the external interface circuit 8."

Figure 5, [0061] " If desirable, the memory 7 and/or the irregular color and irregular luminance correction circuit 1 as well as the central processing unit 6 and the external interface 8 may be arranged at the outside of the projector.")

*wherein the luminance regulating means corrects the image signal to lower a luminance value in a central portion of an image when uniformity improvement of luminance values in central and marginal portions of the image is instructed, or corrects the image signal to lower a luminance value in a marginal portion of an image when emphasis of a central portion of the image is instructed, based on the instruction information and a*

[0037] FIG. 3 a graph for explaining a luminance inclination value;

[0038] FIG. 4 is a table showing a luminance inclination value.

[0045] "explanations will be given of generation of correction values in the correction value generation circuit 9."

[0057] "The correction value generation circuit 9, when it is necessary to generate a new correction value, during factory adjustment, and when the screen 5 is changed, updates the data stored in the memory 7 using the external interface circuit 8 and the central processing unit 6, generates a new correction value by the above-described procedure and stores the new correction value in the memory 7."

Using the external interface, we can either "*lower a luminance value in a marginal portion of an image*" or "*lower a luminance value in a central portion of an image.*")

*correction table showing the relationship between a correction amount and a position in an image.*

([0038] "FIG. 4 is a table showing a luminance inclination value."

[0050] "FIG. 4 is a table showing the luminance inclination value  $D(x, y)_L$  stored in the memory 7.")

**() Regarding Claim 2:**

*An image processing system comprising: signal input means for inputting an image signal;*

(Figure 1. ABSTRACT: an input image signal.

[0041] "inputted image signal RGB")

*luminance regulating means for regulating a luminance value of an image by correcting the inputted image signal;*

(ABSTRACT: "luminance correction circuit...irregular luminance correction for an input image."

9 in Figure 1.

[0002] an irregular color and irregular luminance correction circuit.

[0010] "solving an irregular color and an irregular luminance.")

*signal output means for outputting the corrected image signal; and*

([0012] "a display device for displaying an image;"

[0013] "an optical system for enlarged-projecting the image displayed on the display device by a light from a light source."

Figure 1, Display device 3 accepts a corrected image from correction circuit 1.

[0042] The image signal of which the irregular color and the irregular luminance are corrected is input into a display device 3.

[0044] "when the screen 5 is a reflective screen, there is provided a front projector 10, and when the screen 5 is a transparent screen, there is provided a rear projector 11.")

*luminance measurement means for measuring a luminance value of an image and outputting luminance information,*

([0014] "a memory for storing a luminance distribution value at each point in a projected image when the image is projected on a screen having no characteristic of angle of visibility, a luminance inclination value at each point of the projected image when the image is projected on the screen having no characteristic of angle of visibility, a screen distribution value which is a luminance at each point in the projected image when the image is projected on a screen having a characteristic of angle of visibility after correcting irregular color and irregular luminance by the display device and the optical system."

Art Unit: 2609

Figure 1 shows "external interface" connected to memory.)

*wherein the luminance regulating means corrects the image signal to equalize luminance values in central and marginal portions of an image when the luminance value in the central portion is higher than the luminance value in the marginal portion, based on the luminance information and*

[0037] FIG. 3 a graph for explaining a luminance inclination value;

[0038] FIG. 4 is a table showing a luminance inclination value.

[0045] "explanations will be given of generation of correction values in the correction value generation circuit 9."

[0057] "The correction value generation circuit 9, when it is necessary to generate a new correction value, during factory adjustment, and when the screen 5 is changed, updates the data stored in the memory 7 using the external interface circuit 8 and the central processing unit 6, generates a new correction value by the above-described procedure and stores the new correction value in the memory 7."

Using the external interface, we can equalize luminance, if needed.")

*a correction table showing the relationship between a correction amount and a position in an image.*

[0038] "FIG. 4 is a table showing a luminance inclination value."

[0050] "FIG. 4 is a table showing the luminance inclination value  $D(x, y)_L$  stored in the memory 7.")

**() Regarding Claim 5:**



*An image processing system comprising: signal input section which inputs an image signal;*

(Figure 1. ABSTRACT: an input image signal.

[0041] "inputted image signal RGB")

*luminance regulating section which regulates a luminance value of an image by correcting the inputted image signal;*

(ABSTRACT: "luminance correction circuit...irregular luminance correction for an input image."

9 in Figure 1.

[0010] "solving an irregular color and an irregular luminance.")

*signal output section which outputs the corrected image signal; and*

[(0012] "a display device for displaying an image;"

[0013] "an optical system for enlarged-projecting the image displayed on the display device by a light from a light source."

Figure 1, Display device 3 accepts a corrected image from correction circuit 1.

Figure 1, numbers 2-5 outputs a corrected image.

[0042] The image signal of which the irregular color and the irregular luminance are corrected is input into a display device 3.

[0044] "when the screen 5 is a reflective screen, there is provided a front projector 10, and when the screen 5 is a transparent screen, there is provided a rear projector 11.")

*instruction input section which inputs instruction information which represents a correction instruction from a user,*

Art Unit: 2609

(Figure 1. [0043] “external interface 8.”

[0057] “updates the data stored in the memory 7 using the external interface circuit 8.”

Figure 5, [0061] “If desirable, the memory 7 and/or the irregular color and irregular luminance correction circuit 1 as well as the central processing unit 6 and the external interface 8 may be arranged at the outside of the projector.”)

*wherein the luminance regulating section corrects the image signal to equalize luminance values in central and marginal portions of an image when the luminance value in the central portion is higher than the luminance value in the marginal portion, based on the instruction information and a*

([0037] FIG. 3 a graph for explaining a luminance inclination value;

[0038] FIG. 4 is a table showing a luminance inclination value.

[0045] “explanations will be given of generation of correction values in the correction value generation circuit 9.”

[0057] “The correction value generation circuit 9, when it is necessary to generate a new correction value, during factory adjustment, and when the screen 5 is changed, updates the data stored in the memory 7 using the external interface circuit 8 and the central processing unit 6, generates a new correction value by the above-described procedure and stores the new correction value in the memory 7.”

Using the external interface, we can equalize luminance, if needed.”)

*correction table showing the relationship between a correction amount and a position in an image.*

([0038] “FIG. 4 is a table showing a luminance inclination value.”

Art Unit: 2609

[0050] "FIG. 4 is a table showing the luminance inclination value  $D(x, y)_L$  stored in the memory 7.")

**() Regarding Claim 6:**

*A projector comprising: signal input means for inputting an image signal;*

(Figure 1. ABSTRACT: an input image signal.

[0041] "inputted image signal RGB")

*luminance regulating means for regulating a luminance value of an image by correcting the inputted image signal;*

(ABSTRACT: "luminance correction circuit...irregular luminance correction for an input image."

9 in Figure 1.

[0010] "solving an irregular color and an irregular luminance.")

*signal output means for outputting the corrected image signal;*

[(0012] "a display device for displaying an image;"

[0013] "an optical system for enlarged-projecting the image displayed on the display device by a light from a light source."

Figure 1, Display device 3 accepts a corrected image from correction circuit 1.

[0042] The image signal of which the irregular color and the irregular luminance are corrected is input into a display device 3.

[0044] "when the screen 5 is a reflective screen, there is provided a front projector 10, and when the screen 5 is a transparent screen, there is provided a rear projector 11.")

*instruction input means for inputting instruction information which represents a correction instruction from a user; and*

(Figure 1. [0043] "external interface 8."

[0057] "updates the data stored in the memory 7 using the external interface circuit 8."

Figure 5, [0061] " If desirable, the memory 7 and/or the irregular color and irregular luminance correction circuit 1 as well as the central processing unit 6 and the external interface 8 may be arranged at the outside of the projector.")

*image projecting means for projecting an image based on the image signal output from the signal output means,*

([0002] "The present invention relates to a projector device and a projector system."

[0013] "an optical system for enlarged-projecting the image displayed on the display device by a light from a light source;"

[0010] "present invention to provide a projector device and a projector system.

[0042] "The image signal of which the irregular color and the irregular luminance are corrected is input into a display device 3. A quantity of light from a light source 2 is controlled. The light of which the quantity of light is controlled passes through a projection lens 4 for performing enlarged projection, and then is imaged in the screen 5."

[0044] "when the screen 5 is a reflective screen, there is provided a front projector 10, and when the screen 5 is a transparent screen, there is provided a rear projector 11.")

*wherein the luminance regulating means corrects the image signal to lower a luminance value in a central portion of an image when uniformity improvement of luminance values in central and marginal portions of the image is instructed, or corrects the image signal to lower a luminance*

Art Unit: 2609

*value in a marginal portion of an image when emphasis of a central portion of the image is instructed, based on the instruction information*

[[0037] FIG. 3 a graph for explaining a luminance inclination value;

[0038] FIG. 4 is a table showing a luminance inclination value.

[0045] "explanations will be given of generation of correction values in the correction value generation circuit 9."

[0057] "The correction value generation circuit 9, when it is necessary to generate a new correction value, during factory adjustment, and when the screen 5 is changed, updates the data stored in the memory 7 using the external interface circuit 8 and the central processing unit 6, generates a new correction value by the above-described procedure and stores the new correction value in the memory 7."

Using the external interface, we can either "*lower a luminance value in a marginal portion of an image*" or "*lower a luminance value in a central portion of an image.*")

*and a correction table showing the relationship between a correction amount and a position in an image.*

[[0038] "FIG. 4 is a table showing a luminance inclination value."

[0050] "FIG. 4 is a table showing the luminance inclination value  $D(x, y)_L$  stored in the memory 7.")

**() Regarding Claim 7:**

*A projector comprising:*

[[0002] "The present invention relates to a projector device and a projector system.")

*signal input means for inputting an image signal;*

(Figure 1. ABSTRACT: an input image signal.

[0041] "inputted image signal RGB.")

*luminance regulating means for regulating a luminance value of an image by correcting the inputted image signal;*

(ABSTRACT: "luminance correction circuit...irregular luminance correction for an input image."

9 in Figure 1.

[0010] "solving an irregular color and an irregular luminance.")

*signal output means for outputting the corrected image signal;*

([0012] "a display device for displaying an image;"

[0013] "an optical system for enlarged-projecting the image displayed on the display device by a light from a light source."

Figure 1, Display device 3 accepts a corrected image from correction circuit 1.

[0042] The image signal of which the irregular color and the irregular luminance are corrected is input into a display device 3.

[0044] "when the screen 5 is a reflective screen, there is provided a front projector 10, and when the screen 5 is a transparent screen, there is provided a rear projector 11.")

*luminance measurement means for measuring a luminance value of an image and outputting luminance information; and*

([0014] "a memory for storing a luminance distribution value at each point in a projected image

when the image is projected on a screen having no characteristic of angle of visibility, a

luminance inclination value at each point of the projected image when the image is projected on

Art Unit: 2609

the screen having no characteristic of angle of visibility, a screen distribution value which is a luminance at each point in the projected image when the image is projected on a screen having a characteristic of angle of visibility after correcting irregular color and irregular luminance by the display device and the optical system."

Figure 1 shows "external interface" connected to memory.)

*image projecting means for projecting an image based on the image signal output from the signal output means,*

[[0002] "The present invention relates to a projector device and a projector system."

[0013] "an optical system for enlarged-projecting the image displayed on the display device by a light from a light source;"

[0010] "present invention to provide a projector device and a projector system.

[0042] "The image signal of which the irregular color and the irregular luminance are corrected is input into a display device 3. A quantity of light from a light source 2 is controlled. The light of which the quantity of light is controlled passes through a projection lens 4 for performing enlarged projection, and then is imaged in the screen 5."

[0044] "when the screen 5 is a reflective screen, there is provided a front projector 10, and when the screen 5 is a transparent screen, there is provided a rear projector 11.")

*wherein the luminance regulating means corrects the image signal to equalize luminance values in central and marginal portions of an image when the luminance value in the central portion is higher than the luminance value in the marginal portion, based on the luminance information and a*

[[0037] FIG. 3 a graph for explaining a luminance inclination value;

Art Unit: 2609

[0038] FIG. 4 is a table showing a luminance inclination value.

[0045] "explanations will be given of generation of correction values in the correction value generation circuit 9."

[0057] "The correction value generation circuit 9, when it is necessary to generate a new correction value, during factory adjustment, and when the screen 5 is changed, updates the data stored in the memory 7 using the external interface circuit 8 and the central processing unit 6, generates a new correction value by the above-described procedure and stores the new correction value in the memory 7."

Using the external interface, we can equalize luminance, if needed.")

*correction table showing the relationship between a correction amount and a position in an image.*

([0038] "FIG. 4 is a table showing a luminance inclination value."

[0050] "FIG. 4 is a table showing the luminance inclination value  $D(x, y)_L$  stored in the memory 7.")

**() Regarding Claim 8:**

*A projector comprising: signal input section which inputs an image signal;*

(Figure 1. ABSTRACT: an input image signal.

[0041] "inputted image signal RGB")

*luminance regulating section which regulates a luminance value of an image by correcting the inputted image signal;*



Art Unit: 2609

(ABSTRACT: "luminance correction circuit...irregular luminance correction for an input image."

9 in Figure 1.

[0010] "solving an irregular color and an irregular luminance.")

*signal output section which outputs the corrected image signal;*

[(0012] "a display device for displaying an image;"

[0013] "an optical system for enlarged-projecting the image displayed on the display device by a light from a light source."

Figure 1, Display device 3 accepts a corrected image from correction circuit 1.

[0042] The image signal of which the irregular color and the irregular luminance are corrected is input into a display device 3.

[0044] "when the screen 5 is a reflective screen, there is provided a front projector 10, and when the screen 5 is a transparent screen, there is provided a rear projector 11.")

*instruction input section which inputs instruction information which represents a correction instruction from a user; and*

(Figure 1. [0043] "external interface 8."

[0057] "updates the data stored in the memory 7 using the external interface circuit 8."

Figure 5, [0061] " If desirable, the memory 7 and/or the irregular color and irregular luminance correction circuit 1 as well as the central processing unit 6 and the external interface 8 may be arranged at the outside of the projector.")

*image projecting section which projects an image based on the image signal output from the signal output section,*

[0002] "The present invention relates to a projector device and a projector system."

[0013] "an optical system for enlarged-projecting the image displayed on the display device by a light from a light source;"

[0010] "present invention to provide a projector device and a projector system."

[0042] "The image signal of which the irregular color and the irregular luminance are corrected is input into a display device 3. A quantity of light from a light source 2 is controlled. The light of which the quantity of light is controlled passes through a projection lens 4 for performing enlarged projection, and then is imaged in the screen 5."

[0044] "when the screen 5 is a reflective screen, there is provided a front projector 10, and when the screen 5 is a transparent screen, there is provided a rear projector 11.")

*wherein the luminance regulating section corrects the image signal to equalize luminance values in central and marginal portions of an image when the luminance value in the central portion is higher than the luminance value in the marginal portion, based on the instruction information and a*

[0037] FIG. 3 a graph for explaining a luminance inclination value;

[0038] FIG. 4 is a table showing a luminance inclination value.

[0045] "explanations will be given of generation of correction values in the correction value generation circuit 9."

[0057] "The correction value generation circuit 9, when it is necessary to generate a new correction value, during factory adjustment, and when the screen 5 is changed, updates the data stored in the memory 7 using the external interface circuit 8 and the central processing unit 6, generates a new correction value by the above-described procedure and stores the new correction value in the memory 7."

Art Unit: 2609

Using the external interface, we can either “*lower a luminance value in a marginal portion of an image*” or “*lower a luminance value in a central portion of an image.*”)

*correction table showing the relationship between a correction amount and a position in an image.*

[0038] “FIG. 4 is a table showing a luminance inclination value.”

[0050] “FIG. 4 is a table showing the luminance inclination value  $D(x, y)_L$  stored in the memory 7.”)

**() Regarding Claim 9:**

*A computer-readable program causing a computer to function as:*

(Program is inherent, since CPU uses a program. CPU is the computer, which has access to memory 7.

[0043] central processing unit (CPU) 6)

*signal input means for inputting an image signal;*

(Figure 1. ABSTRACT: an input image signal.

[0041] “inputted image signal RGB”)

*luminance regulating means for regulating a luminance value of an image by correcting the inputted image signal;*

(ABSTRACT: “luminance correction circuit...irregular luminance correction for an input image.”

9 in Figure 1.

[0010] “solving an irregular color and an irregular luminance.”)

*signal output means for outputting the corrected image signal; and*

([0012] “a display device for displaying an image;”

[0013] “an optical system for enlarged-projecting the image displayed on the display device by a light from a light source.”

Figure 1, Display device 3 accepts a corrected image from correction circuit 1.

[0042] The image signal of which the irregular color and the irregular luminance are corrected is input into a display device 3.

[0044] “when the screen 5 is a reflective screen, there is provided a front projector 10, and when the screen 5 is a transparent screen, there is provided a rear projector 11.”)

*instruction input means for inputting instruction information which represents a correction instruction from a user,*

(Figure 1. [0043] “external interface 8.”

[0057] “updates the data stored in the memory 7 using the external interface circuit 8.”

Figure 5, [0061] ” If desirable, the memory 7 and/or the irregular color and irregular luminance correction circuit 1 as well as the central processing unit 6 and the external interface 8 may be arranged at the outside of the projector.”)

*wherein the luminance regulating means corrects the image signal to lower a luminance value in a central portion of an image when uniformity improvement of luminance values in central and marginal portions of the image is instructed, or corrects the image signal to lower a luminance value in a marginal portion of an image when emphasis of a central portion of the image is instructed, based on the instruction information and*

([0037] FIG. 3 a graph for explaining a luminance inclination value;

[0038] FIG. 4 is a table showing a luminance inclination value.

[0045] “explanations will be given of generation of correction values in the correction value generation circuit 9.”

[0057] “The correction value generation circuit 9, when it is necessary to generate a new correction value, during factory adjustment, and when the screen 5 is changed, updates the data stored in the memory 7 using the external interface circuit 8 and the central processing unit 6, generates a new correction value by the above-described procedure and stores the new correction value in the memory 7.”

Using the external interface, we can either “*lower a luminance value in a marginal portion of an image*” or “*lower a luminance value in a central portion of an image.*”)

*a correction table showing the relationship between a correction amount and a position in an image.*

([0038] “FIG. 4 is a table showing a luminance inclination value.”

[0050] “FIG. 4 is a table showing the luminance inclination value  $D(x, y)_L$  stored in the memory 7.”)

**() Regarding Claim 10:**

*A computer-readable program causing a computer to function as:*

(Program is inherent, since CPU uses a program. CPU is the computer, which has access to memory 7. [0043] central processing unit (CPU) 6)

*signal input means for inputting an image signal;*

(Figure 1. ABSTRACT: an input image signal.

[0041] "inputted image signal RGB")

*luminance regulating means for regulating a luminance value of an image by correcting the inputted image signal;*

(ABSTRACT: "luminance correction circuit...irregular luminance correction for an input image."  
9 in Figure 1.

[0010] "solving an irregular color and an irregular luminance.")

*signal output means for outputting the corrected image signal; and*

[0012] "a display device for displaying an image;"

[0013] "an optical system for enlarged-projecting the image displayed on the display device by a light from a light source."

Figure 1, Display device 3 accepts a corrected image from correction circuit 1.

[0042] The image signal of which the irregular color and the irregular luminance are corrected is input into a display device 3.

[0044] "when the screen 5 is a reflective screen, there is provided a front projector 10, and when the screen 5 is a transparent screen, there is provided a rear projector 11.")

*luminance measurement means for measuring a luminance value of an image and outputting luminance information,*

[0014] "a memory for storing a luminance distribution value at each point in a projected image when the image is projected on a screen having no characteristic of angle of visibility, a luminance inclination value at each point of the projected image when the image is projected on the screen having no characteristic of angle of visibility, a screen distribution value which is a

Art Unit: 2609

luminance at each point in the projected image when the image is projected on a screen having a characteristic of angle of visibility after correcting irregular color and irregular luminance by the display device and the optical system.”

Figure 1 shows “external interface” connected to memory.)

*wherein the luminance regulating means corrects the image signal to equalize luminance values in central and marginal portions of an image when the luminance value in the central portion is higher than the luminance value in the marginal portion, based on the luminance information*

[[0037] FIG. 3 a graph for explaining a luminance inclination value;

[0038] FIG. 4 is a table showing a luminance inclination value.

[0045] “explanations will be given of generation of correction values in the correction value generation circuit 9.”

[0057] “The correction value generation circuit 9, when it is necessary to generate a new correction value, during factory adjustment, and when the screen 5 is changed, updates the data stored in the memory 7 using the external interface circuit 8 and the central processing unit 6, generates a new correction value by the above-described procedure and stores the new correction value in the memory 7.”

Using the external interface, we can equalize luminance, if needed.”)

*and a correction table showing the relationship between a correction amount and a position in an image.*

[[0038] “FIG. 4 is a table showing a luminance inclination value.”

[0050] "FIG. 4 is a table showing the luminance inclination value  $D(x, y)_L$  stored in the memory 7.")

**() Regarding Claim 11:**

*A computer-readable information storage medium storing the program as defined in claim 9.*

(7 in Figure 1 is memory. RAM and ROM are inherent because many CPUs use them.

ABSTRACT: "luminance correction circuit includes a memory, a CPU...In the memory, luminance distribution values, luminance inclination values, screen distribution values, and correction values at n-pieces of levels at each correction point obtained at factory adjustment are stored as digital data.

[0014] "a memory for storing."

[0016] "an external interface for inputting data into the memory in accordance with instructions of the internal central processing unit;")

**() Regarding Claim 12:**

*An image processing method comprising: inputting instruction information representing a correction instruction from a user;*

(Figure 1. [0043] "external interface 8."

[0057] "updates the data stored in the memory 7 using the external interface circuit 8."

Figure 5, [0061] " If desirable, the memory 7 and/or the irregular color and irregular luminance correction circuit 1 as well as the central processing unit 6 and the external interface 8 may be arranged at the outside of the projector.")

*inputting an image signal;*



(Figure 1. ABSTRACT: an input image signal.

[0041] "inputted image signal RGB")

*correcting the image signal to lower a luminance value in a central portion of an image when uniformity improvement of luminance values in central and marginal portions of the image is instructed, or correcting the image signal to lower a luminance value in a marginal portion of an image when emphasis of the central portion of the image is instructed, based on the instruction information and a*

[(0037] FIG. 3 a graph for explaining a luminance inclination value;

[0038] FIG. 4 is a table showing a luminance inclination value.

[0045] "explanations will be given of generation of correction values in the correction value generation circuit 9."

[0057] "The correction value generation circuit 9, when it is necessary to generate a new correction value, during factory adjustment, and when the screen 5 is changed, updates the data stored in the memory 7 using the external interface circuit 8 and the central processing unit 6, generates a new correction value by the above-described procedure and stores the new correction value in the memory 7."

Using the external interface, we can either "*lower a luminance value in a marginal portion of an image*" or "*lower a luminance value in a central portion of an image.*")

*correction table showing the relationship between a correction amount and a position in an image;*

[(0038] "FIG. 4 is a table showing a luminance inclination value."

Art Unit: 2609

[0050] "FIG. 4 is a table showing the luminance inclination value  $D(x, y)_L$  stored in the memory 7.")

*and outputting the corrected image signal.*

[0012] "a display device for displaying an image;"

[0013] "an optical system for enlarged-projecting the image displayed on the display device by a light from a light source."

Figure 1, Display device 3 accepts a corrected image from correction circuit 1.

[0042] The image signal of which the irregular color and the irregular luminance are corrected is input into a display device 3.

[0044] "when the screen 5 is a reflective screen, there is provided a front projector 10, and when the screen 5 is a transparent screen, there is provided a rear projector 11.")

**(I) Regarding Claim 13:**

*An image processing method comprising: measuring a luminance value of a displayed image and outputting luminance information;*

[0014] "a memory for storing a luminance distribution value at each point in a projected image when the image is projected on a screen having no characteristic of angle of visibility, a luminance inclination value at each point of the projected image when the image is projected on the screen having no characteristic of angle of visibility, a screen distribution value which is a luminance at each point in the projected image when the image is projected on a screen having a characteristic of angle of visibility after correcting irregular color and irregular luminance by the display device and the optical system." Figure 1 shows "external interface" connected to memory.)

*inputting an image signal;*

(Figure 1. ABSTRACT: an input image signal.

[0041] “inputted image signal RGB”)

*correcting the image signal to equalize luminance values in central and marginal portions of an image when the luminance value in the central portion is higher than the luminance value in the marginal portion, based on the luminance information and a correction table showing the relationship between a correction amount and a position in an image;*

([0037] FIG. 3 a graph for explaining a luminance inclination value;

[0038] FIG. 4 is a table showing a luminance inclination value.

[0045] “explanations will be given of generation of correction values in the correction value generation circuit 9.”

[0057] “The correction value generation circuit 9, when it is necessary to generate a new correction value, during factory adjustment, and when the screen 5 is changed, updates the data stored in the memory 7 using the external interface circuit 8 and the central processing unit 6, generates a new correction value by the above-described procedure and stores the new correction value in the memory 7.”

Using the external interface, we can equalize luminance, if needed.”)

*and outputting the corrected image signal.*

([0012] “a display device for displaying an image;”

[0013] “an optical system for enlarged-projecting the image displayed on the display device by a light from a light source.”

Figure 1, Display device 3 accepts a corrected image from correction circuit 1.

Art Unit: 2609

[0042] The image signal of which the irregular color and the irregular luminance are corrected is input into a display device 3.

[0044] “when the screen 5 is a reflective screen, there is provided a front projector 10, and when the screen 5 is a transparent screen, there is provided a rear projector 11.”)

***Allowable Subject Matter***

6. **Claims 3 and 4** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tsujihara (US 5298985 A) discloses “Image correction apparatus for adjusting images by digitally controlling analog correction waveforms.”

Hibbard (US 6118113 A) discloses, “Focusing mirror control system and method for adjusting same.”

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Max Shikhman whose telephone number is (571) 270-1669. The examiner can normally be reached on Monday-Friday 7:30AM-5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on (571) 272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2609

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Max Shikhman  
2/6/2007



SHUWANG LIU  
SUPERVISORY PATENT EXAMINER